REMARKS

In the Office Action, claims 1-10 and 23-40 remain withdrawn. Claims 11-22 were rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent 4,564,945 to Glover, et al. (Glover) in view of the United States Patent 5,392,299 to Rhines, et al. (Rhines).

In this Amendment, Applicants amend claim 11, but have not added or amended any other claim. Accordingly, claims 1-40 will remain pending in the application upon entry of this Amendment.

Rejection of Claims 11-22 under §103(a)

Claims 11-22 were rejected under §103(a) as being unpatentable over Glover in view of Rhines. Claims 12-22 are dependent on claim 11. Claim 11 recites a method that encodes a block of data. The block of data has n-dimensions and is received from an input source. The block contains several information bits. The method receives a row of the block and immediately outputs the row. The method encodes the information bits in the row, thereby forming a first set of encoding data including a first parity data. The first set of encoded data is generated according to a first encoding scheme. The method outputs the first set of encoded data. The method encodes the information bits in a column is generated according to a second encoding scheme, thereby forming a second set of encoded data including a second parity data. The second set of encoded data is generated and iteratively updated according to the information bits in the row. The method hyper-diagonally encodes the information bits in the block according to a parity encoding scheme, thereby forming a hyper set of encoded data comprising a plurality of hyper parity data values. Each hyper parity data value is generated according to: the information bits in the row, the information bits in the column, the first parity data, and the second set of encoded data. At least one information bit in the row is located in a different row for the hyper set of encoded data than in the block. The method outputs the second set of encoded data after all the information bits and all subsequent first sets of encoded data are outputted. The method outputs the hyper set of encoded data.

Applicants respectfully submit that Glover, Rhines, and their combination do not disclose, teach, or suggest hyper-diagonally encoding as claimed above. Within the Office Action, it is acknowledged that Glover does not teach hyper-diagonal encoding. The Examiner explicitly cites Rhines as teaching hyper-diagonal encoding. Specifically, the Examiner states

that the orthogonal interleaving step and the subsequent second encoding step teach the claimed hyper-diagonal encoding. The Applicants respectfully disagree with this conclusion because the orthogonal interleaving and subsequent second encoding do not generate hyper parity data values where each hyper parity data value is generated according to previously encoded parity data, as claimed.

In particular, Rhines teaches that input data, referred to as user data code group, is provided to an outer encoder C3, which generates first error correction codes, referred to as C3 code symbols. The output of the outer encoder C3 is a series of C3 encoded code words, each including a user code group (original data word) plus a corresponding C3 code symbol (first error correction code). The series of C3 encoded code words are input to the outer interleaver 16, where each C3 encoded code word is input to a successive column 18 in a two-dimensional memory array of the outer interleaver 16. In this manner, a top portion of each column includes original user data 22, and a bottom portion of each column includes the first error correction codes 24 (Rhines, Figure 3; col. 9, lines 53). In this manner, multiple data planes within the outer interleaver 16 are filled with C2 encoded code words Rhines, Figure 3, data planes 28, 30, 32). The outer interleaver 16 shuffles rows of the stored series of data planes to generate a second series of data planes, as shown in Figure 4B of Rhines. As a result, each column now includes a succession of shuffled row values. However, the top portion of each shuffled row still includes only original data values 22, and the bottom portion of each shuffled column still includes only first error correction codes 24. Each column is then output from the outer interleaver 16 as a shuffled C3 encoded code word, where the middle encoder C2 encodes each shuffled C3 encoded code word.

Within the Office Action, the Examiner contends that the combined function of the outer interleaver 16 and the middle encoder C2 of Rhines teaches the claimed hyper-diagonal encoder. If this analogy is correct, which the Applicants do not believe to be the case, then the second error correction codes (C2 code symbols) output by the middle encoder C2 are analogous to the claimed hyper set of encoded data. However, this is not the case. The claimed hyper set of encoded data includes a plurality of hyper parity data values, each hyper parity data value is generated according to the information bits in the row (original row data), the information bits in the column (original column data), the first parity data (resulting from a first encoding process), and the second parity data (resulting from a second encoding process). It is clear from the above description that the middle encoder C2 generates the C2 code

symbols from only a single set of correction codes, the C3 code symbols. The middle encoder C2 does not generate hyper parity data according to two different sets of parity data, as claimed.

For at least these reasons, the amended independent claim 11 is allowable over Glover, Rhines, and their combination. Since claims 12-22 are dependent on claim 11, Applicants respectfully submit that the cited references do not invalidate claims 12-22 for at least the reasons discussed above in relation to claim 11. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the §103(a) rejection of claims 11-22.

CONCLUSION

Applicants respectfully submit that all pending claims, namely claims 11-22, are in condition for allowance. Reconsideration of the rejection is requested. Examination and allowance are earnestly solicited at the earliest possible date. Should the Examiner have any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

HAVERSTOCK & OWENS LLP

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By Thomas B. Haverstock
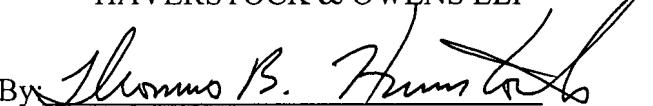
Thomas B. Haverstock
Reg. No. 32,571
Attorney for Applicants